REMARKS

Claims 1-83 are pending. By this response, claims 1 and 8 are amended. Claims 4-7, 9-12, 14-17, 19-22, 24-27, 29-32, 34-37, 39-42, 44-47, 49-52, 54-57, 59-62, 64-67 and 69-83 are withdrawn from consideration. Reconsideration and allowance based on the above amendments and following remarks are respectfully requested.

Allowable Subject Matter

Applicants appreciate the indication of claims 13, 18, 23, 28, 33, 38, 43, 48, 53, 58, 63 and 68 as containing allowable subject matter and would be allowed if rewritten into independent form to include all the limitations of the base claim and any intervening claims.

Claim Objection

The Office Action objects to claim 8 due to a minor informality. Specifically, the Office Action alleges that the term "filed" should be "field". Applicants have amended claim 8 to make this correction. Accordingly, withdrawal of the objection is respectfully requested.

Prior Art Rejections

The Office Action rejects claim 1 under 35 U.S.C. §103(a) as being unpatentable over Acharya (US 6,366,694) in view of Higuchi (US 6,721,005) and claims 2-3 and 8 under 35 U.S.C. §103(a) as being unpatenable over Acharya, Higuchi and Nishizawa, et al. (US 4,516,154). These rejections are respectfully traversed.

Acharya teaches an integrated color interpolation and color space conversion apparatus. In Acharya's technique, an image is arranged in a pattern, such as a Bayer pattern, where each pixel has only one color component from the red, green and blue color palette. An interpolation technique is used such as linear filtering, to obtain the two other color components for each pixel. A color plane of each pixel of the image can be generated for each color. See column 4 through column 5, lines 1-34.

In contrast, in embodiments of the present invention, a photosensitive cell is arranged such that virtual pixels can be derived within the arrangements of actual pixels. The position of the virtual pixel and the three primary colors of the image data are derived based on the pixel data.

In Acharya, the position of each pixel is known and at least one color component of each pixel is also known. The interpolation used in Acharya only provides the two other color components missing from each pixel. In the Bayer pattern of Acharya, a color space conversion color causes Red (R), Green (G) and Blue (B) signals to be generated for each of the actual pixels. See lines 1-5 and 33-35. In contrast, in embodiments of the present invention data on the actual pixels are used to generate data for virtual pixels.

Thus, Acharya does not obtain position data for virtual pixels in one mode and three primary colors of the virtual pixels in a second mode. Thus, Acharya fails to teach or suggest, *inter alia*, a signal processing circuit for interpolating, in a first mode, designated by said operation commanding circuit, pixel data in positions of said virtual pixels or positions of said photosensitive cells and generating three primary color data on the basis of a plurality of pixel

data, which are produced by mixing pixel data, or interpolating, in a second mode designated by said operation commanding circuit, three primary color image data in the positions of said virtual pixels on the basis of all pixel data sequentially read out of said photosensitive cells, generating three primary color pixel data at the positions of said photosensitive cells on the basis of said pixel data given to said virtual pixels, and broadening a frequency ban of said three (3) primary color image data, as recited in claim 1.

Further, Higuchi fails to make up for Acharya's deficiencies. Higuchi teaches a size configuration for a solid state image sensor that includes a pixel area for receiving light in a black level area. This sensor shape is reduced in certain areas to optimize yield of the sensors on a chip and sensitivity by increasing the effective pixel area in proportion to the decrease in black area. See column 3, line 55 through column 4, line 56.

The Office Action alleges that Higuchi teaches "electrodes arranged in such a manner as to skirt round the apertures for producing signals from said photosensitive cells", as recited in claim 1. Applicants note that nowhere does Higuchi teach or suggest an arrangement of photosensitive cells such that it skirts around apertures. Higuchi merely teaches reduction of black areas to increase effective pixel area, while also reducing overall size of the image sensor to increase the yield. There is no teaching of making such sensor arrangement in order to skirt round apertures.

Further, Nishizawa fails to make up for deficiencies in the combination of Acharya and Higuchi. Nishizawa teaches a C-MOS type of color image sensor. See column 3, line 67. Nishizawa discloses that two rows or lines of photoconductive elements are read simultaneously

to generate color data, white (w), yellow (ye), and cyan (cy) in complementary color from the brightness signal and the R, G and B signals. See column 3 lines 4-7, Figs 4 and 5. There is no teaching on how to position the signals thus generated.

In view of the above, applicants respectfully submit that a combination of Acharya and Higuchi fail to teach each and every feature of independent claim 1 as required. Dependent claims 2-3 and 8 are also distinguishable over the cited art for the above reasons as well as for the additional features they recite. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

Information Disclosure Statement

In reviewing the application file, the undersigned has noted that the appropriate initialed Form PTO-1449 in response to the Information Disclosure Statement (IDS) filed on March 14, 2001 has not been received by Applicant. The Examiner is therefore requested to return a copy of the initialed Form PTO-1449 to the undersigned as soon as possible.

CONCLUSION

For at least these reasons, it is respectfully submitted that claims 1-3 and 8 are distinguishable over the cited art. Favorable consideration and prompt allowance are earnestly solicited.

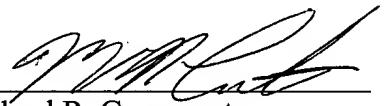
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Chad J. Billings (Reg. No. 48,917) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to the provisions of 37 C.F.R. § 1.17 and 1.136(a), the Applicants hereby petition for an extension of one (1) month to November 14, 2005 in which to file a reply to the Office Action. The required fee of $120.00 is enclosed herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: November 4, 2005

Respectfully submitted,

By 

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Attachment: Form PTO-1449 dated March 14, 2001